

REMARKS

Interview Summary

Applicants wish to thank the Examiner for participating in the interview dated April 8, 2004. Applicant's representative, Mr. McGarrigle, briefly discussed the outstanding office action in which he respectfully disagreed with the present rejections and explained that the claims were originally drafted as that was what Applicants believed was acceptable practice for computer software related claims. However, the Examiner and Mr. McGarrigle discussed redrafting the claims in a more straightforward manner. Thereafter, Applicants discussed potential claim amendments with the Examiner on May 7th, 2004, but no agreement was reached. However, the Examiner offered several helpful suggestions which have been incorporated into the claims. For example, he suggested deleting the last limitation of claim 57 and redefining the term "different". It is hoped that the present format will be more presentable to the Examiner. Consequently, Applicants believe that the present claims are patentable and request allowance at the Examiner's earliest convenience.

Miscellaneous Edits

Applicants have made some minor edits to the claims. For example, the word "solid" has been deleted from some dependant claims as the independent claim did not recite the word, "known locations" was changed to "localized areas" as in prior amendments, and scientific notation was used. Additionally, Applicants inserted some dependant claim language into some independent claims as other amendments made some claims more similar.

Sequence Rule Non-Compliance

In response to Examiner's indication of a non-compliance with 37 CFR §1.821 through 1.825 due to alleged absence of SEQ ID Nos., Applicants wish to direct the Examiner's attention to an amendment filed on August 22, 2002 for the instant application. Applicants have verified, through PAIR, the actual receipt and possession of this document by the USPTO and have attached an additional copy of the relevant portion for the Examiner's review. In light of this fact, Applicants respectfully request reconsideration and withdrawal of the above objection.

Rejections under 35 USC §112, first paragraph: New Matter

The Examiner has rejected claims 57-155 on the basis of introduction of new matter as embodied by the limitations **“computer executable instructions”** in claims 57-64, 78-85, **“computer program code”** in claims 65-72, 86-93, 120-131, **“machine instructions”** in claims 73-77, 94-107, 144-155, **“executable instructions”** in claims 108-119, 132-143, **“computer readable medium”** in claims 108-119, 132-143, **“computer software product”** in claims 65-72, 86-93, 120-131, and **“system...comprising...a processor; and a memory”** in claims 144-155. Most notably, the Examiner stated there is “no disclosure of the above per se.” As stated above, Applicants have amended claims 57-155 in a manner guided by the discussions between the Examiner and Mr. McGarrigle in an April 8th, 2004 interview. Specifically, these words have been deleted.

For example, all instances of the phrases **“computer readable medium comprising computer executable instructions,” “computer readable medium comprising executable instructions,”** and **“computer readable medium”** in the claims have been changed to **“computer program.”** Explicit support for this limitation can be found in the specification, as the Examiner may discern from the paragraph starting on line 8 of page 55. Furthermore, the submission of Appendix B (containing code for the photo counting program and scaling program which are part of the data collection system of the claimed invention), while correcting an informality later addressed in the Remarks, also lends additional support to the terms **“computer program,” “program,”** and **“computer software”** in the amended claims above.

Instances of the term **“computer software product”** have been amended to read **“computer software.”** Correspondingly, the claim limitation **“computer program code”** has been altered to read **“software.”** Specific written description for the claimed scanning or data collection software is located in the Brief Description of Drawings for Fig. 13 on page 5, line 29-30. Likewise, Applicants acknowledge the Examiner’s rejection of the claim language **“a system...comprising a processor; and a memory...the memory storing...machine instructions that cause the processor to perform...steps when implemented by the processor”** and have rewritten claims 73, 94, 102, and 144 to incorporate **“a system...comprising a computer containing a program that implements...steps.”** Support for this limitation can be found in the paragraph starting on line 8, page 55 of the specification.

Applicants especially wish to direct the Examiner's attention to lines 9-12, and line 15 which describe one specific program as being in an IBM PC compatible computer and directing operation of the data collection system. In light of the specification, Applicants believe that no new matter has been presented and respectfully request entry of the proposed amendments and withdrawal of the above rejections.

The Examiner also rejects claims 57-155 due to absence of a fluorescence intensity limitation as to the data source. Applicants respectfully disagree and refer the Examiner to U.S. Patent No. 5,143,854 (USSN 07/492,462), which has been incorporated by reference for all purposes. Please see the section entitled "Cross Reference to Related Applications" for the incorporation-by-reference clause in the instant specification. Support for the generic intensity data limitation can be found in U.S. Patent No. 5,143,854 as detailed in the table below:

Location	Excerpt
Column 3, lines 45-49	The receptors are preferably labeled with, for example, a <i>fluorescent marker, radioactive marker, or a labeled antibody reactive with the receptor.</i> The location of the marker on the substrate is detected with, for example, <i>photon detection or autoradiographic techniques.</i>
Column 6, lines 33-39	<i>Radiation: Energy which may be selectively applied including energy having a wavelength of between 10^{-14} and 10^4 meters including, for example, electron beam radiation, gamma radiation, x-ray radiation, ultraviolet radiation, visible light, infrared radiation, microwave radiation, and radio waves.</i> "Irradiation" refers to the application of radiation to a surface.
Column 10, lines 44-50	The receptor molecules may bind with one or more polymers on the substrate. The presence of the labeled receptor and, therefore, the presence of a sequence which binds with the receptor is <i>detected in a preferred embodiment through the use of autoradiography, detection of fluorescence with a charge-coupled device, fluorescence microscopy, or the like.</i>
Column 22, line 61- Column 23, line 8	In practice it is found that a receptor will bind to several peptide sequences in an array, but will bind much more strongly to some sequences than others. <i>Strong binding affinity will be evidenced herein by a strong fluorescent or radiographic signal</i> since many receptor molecules will bind in a region of a strongly bound ligand. Conversely, <i>a weak binding affinity will be evidenced by a weak fluorescent or radiographic signal</i> due to the relatively small number of receptor molecules which bind in a particular region of a substrate having a ligand with a weak binding affinity for the receptor. Consequently, it becomes possible to <i>determine relative binding avidity</i> (or affinity in the case of univalent interactions) <i>of a ligand herein by way of the intensity of a fluorescent or radiographic signal</i> in a region containing that ligand.

In light of the supportive evidence above, Applicants hereby respectfully request reconsideration and withdrawal of the above rejections. However, Applicants make note that independent claims 94, 102 and 144 as well as dependent claims 82, 90, 129, 141 and 156-162 are limited to using fluorescent intensity data.

Rejections under 35 USC §112, second paragraph

In order to address the Examiner's concerns underlying the rejection of claims 57-155, Applicants have amended independent claims 57, 65, 73, 78, 86, 94, 102, 108, 120, 132, and 144 to more clearly direct the claims to polymer array scanning instead of generic scanning of a substrate surface area. For instance, Applicants have added the limitation for acquiring data "from a polymer array" in claim 57 and reiterated this limitation in other steps of the computer program embodied in said claim. Similar amendments were made to claims 65, 73, 78, 86, 94, 102, 108, 120, 132, and 144. As a result, the claims more clearly show that the computer program is specific to scanning polymer arrays on a substrate and that the intensity data is specific to the polymer array. In light of the above amendments, Applicants respectfully request that the Examiner enter the clarifying amendments to these claims and reconsider and withdraw the above rejection.

Rejections under 35 USC §102(b): Prior Art

The Examiner has rejected claims 57-155 over Williams et al. DNA 4(3):255(1985). In particular, the Examiner has noted that claim 102 lacks language limiting the area of localized areas on a scanned substrate. Consequently, Applicants herein amend claim 102 so as to limit the localized area to an area smaller than 2.5×10^5 microns².

The Examiner has also indicated the possibility of several interpretations for instant claim 57, amongst other claims, due to the phrase "given localized area." In order to clarify that the localized area mentioned is an antecedent reference to an area smaller than 2.5×10^5 microns², Applicants have amended independent claims 57, 65, 73, 78, 86, 94, 102, 108, 120, 132, and 144 by substituting "at least one of said localized areas" for the phrase "given localized area."

In response to the Examiner's assertion that claims 57-155 are anticipated by Williams et al., Applicants wish to note that the spot areas of Williams et al. are larger than the 2.5×10^5 microns² areas to which our claims are drawn, as Examiner states in the Office Action

dated January 12, 2004. Another major point of distinction involves the nature of what is being scanned in our claimed invention as compared to Williams et al. As evidenced by the abstract of Williams et al. and the first paragraph under the Materials and Methods section, the system disclosed therein is directed to the computer analysis of autoradiograms produced from dot blots. In Williams et al., it is the film image of the spots that are being scanned whereas Applicants' claimed invention involves the direct scanning of a substrate containing the actual polymer probes. To further substantiate this distinction, Applicants wish to direct the Examiner's attention to FIG. 1 of Williams et al., which specifies that a film scanner is being used in the process. In light of this fact, the pending claims contain limitations not disclosed in Williams et al., thereby precluding grounds for a 35 USC §102 rejection based on the art above. Applicants hereby respectfully request that the Examiner withdraw this rejection and allow the claims submitted herein.

Lastly, the Examiner has noted a need to clarify the limitation of "different" polymers in the pending claims. Applicants acknowledge the Examiner's request and herein amend independent claims 57, 65, 73, 78, 86, 94, 102, 108, 120, 132, and 144 to reflect that these polymers have a different sequence. Applicants have also amended these claims to state that the polymer array has "diverse" sequences. Support for this limitations is found throughout the specification, especially at page/line; 1/31, 2/2, 2/7, 2/20, 5/9, 3/20, 14/32, 18/24, and 36/10.

Informalities

Applicants thank the Examiner for noting the use of uncapitalized letters in Figure designations and herein amend the specification to correct these typos in accordance with 37 CFR §1.84(u)(1). Entry of these amendments is respectfully requested.

Regarding the omission of Appendix A and B as referenced in the instant application, Applicants wish to correct this inadvertent, good-faith mistake by submitting two CDs created on March 19, 2004, each containing two files named APPAandB.txt (347 KB) and APPAandB.tif (5,150 KB). In accordance with the requirements set forth in 37 CFR §1.52, the compact disc and duplicate copy are labeled "Copy 1" and "Copy 2" respectively, and Applicants have confirmed the contents of the two CDs to be identical. Furthermore, Applicants herein amend the specification to include a reference to the "computer program

listing appendix” at the location indicated in 37 CFR §1.77(b)(4). Applicants believe that submission of Appendix A and B presents no new matter, and entry of the computer program listing is respectfully requested.

Explanation of Other Amendments to the Specification and Claims

Amendments to the paragraph beginning on page 33, line 28 in the specification was made to re-insert “YGAF (SEQ ID NO:8)” after sequence “YGAF LF (SEQ ID NO:12)” in order to correct an earlier inadvertent deletion of these words from the original specification as filed.

Occurrences of “250000” in the pending claims, namely claims 57, 65, 73, 78, 86, 94, 102, 108, 120, 132, and 144, have also been changed to its corresponding scientific notation “ 2.5×10^5 ” to conform with the notation used in claims of a related application Serial No. 09/724,922. For similar reason, occurrences of the word “logical” have been deleted from claims 73, 94, 102, and 144. Applicants believe the above amendments to the specification and claims present no new matter and respectfully request entry of said amendments.

Claims 57, 65, 73, 78, 86, 94, 108, 120, 132, and 144 have been amended to include the limitation of “scanning” polymers located on a substrate as part of the invention. Support for the limitation is provided in the paragraph starting on line 8 of page 55, which describes the claimed program’s control over scanning a substrate with a probe array attached thereto. It is Applicants’ belief that said amendments do not introduce new matter, therefore, entry of the proposed amendments is hereby respectfully requested.

CONCLUSION

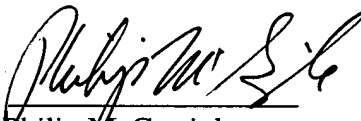
Reconsideration and allowance of all pending claims is respectfully requested. If a telephone conversation with Applicants' representative would expedite prosecution of the above-identified application, the Examiner is urged to call the undersigned at (408) 731-5021.

The Commissioner is hereby authorized to charge \$420.00 for the 2-month extension of time to Deposit Account 01-0431. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account 01-0431.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
AFFYMETRIX, INC.

Date: May 26, 2004

By: 
Philip McGarrigle
Reg. No. 31,395

Attachments

Two (2) copies of a CD (Copy 1 and Copy 2) Computer Program Listings of Appendix A and B, created 03/19/04, file named APPAandB.txt (347 KB) and APPAandB.tif (5,150 KB).

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